SHARP

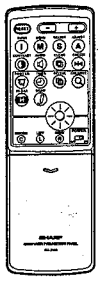
MODEL
MODELLE
MODELL

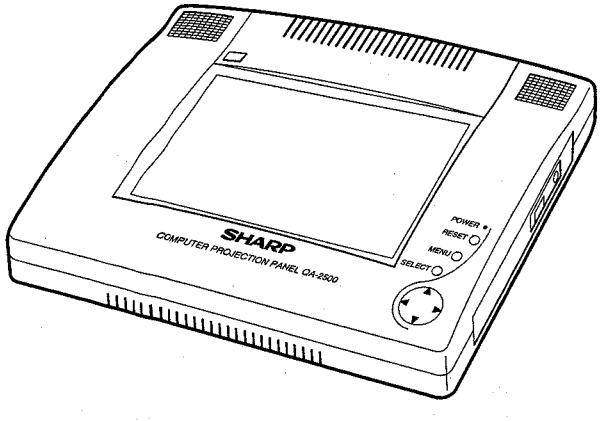
QA-2500

MODELLO
MODELO
MODEL

COLOR COMPUTER/VIDEO PROJECTION PANEL
ÉCRAN DE PROJECTION COULEUR FOUR VIDEO/ORDINATEURS
COMPUTER/VIDEO-FARBPROJEKTIONS-PANEL
PANNELLO DI PROIEZIONE A COLORI PER COMPUTER/VIDEO
PANEL DE PROYECCIÓN EN COLOR PARA COMPUTADORA/ VIDEO
KLEUREN COMPUTER/VIDEO-PROJECTIEPANEEL

OPERATION MANUAL
MODE D'EMPLOI
BEDIENUNGSANLEITUNG
MANUALE D'ISTRUZIONI
MANUAL DE INSTRUCCIONES
GEBRUIKSAANWIJZING





ENGLISH 1
FRANÇAIS 39
DEUTSCH 77
ITALIANO 117
ESPAÑOL 155
NEDERLANDS 193

This apparatus complies with the requirements of EN 55022, 02. 1987 and BS 800:1988.

Cet appareil répond aux spécifications de la EN 55022, 02. 1987.

Dieses Gerät stimmt mit den Bedingungen der EN 55022, 02. 1987 überein.

Questo apparecchio è stato prodotto in conformità alle EN 55022, 02. 1987.

Este aparato cumple las especificaciones de la EN 55022, 02. 1987.

Dit apparaat voldoet aan de vereiste EN 55022, 02. 1987.

This equipment complies with the requirements of Directives 89/336/EEC and 73/23/EEC as amended by 93/68/EEC.

Ce matériel répond aux exigences contenues dans les directives 89/336/CEE et 73/23/CEE modifiées par la directive 93/68/CEE.

Dieses Gerät entspricht den Anforderungen der EG-Richtlinien 89/336/EWG und 73/23/EWG mit Änderung 93/68/EWG.

Quest' apparecchio è conforme ai requisiti delle direttive 89/336/EEC e 73/23/EEC, I alle successive modifiche introdotte dalla direttiva 93/68/EEC.

Este aparato satisface las exigencias de las Directivas 89/336/CEE y 73/23/CEE, modificadas por medio de la 93/68/CEE.

Dit apparaat voldoet aan de eisen van de richtlijnen 89/336/EEG en 73/23/EEG, gewijzigd door 93/68/EEG.

ENGLISH

CONTENTS

SPECIAL NOTES 3

1. INTRODUCTION 4

2. DESCRIPTION OF MAIN COMPONENTS 5

3. SET UP 8
   - Positioning 8
   - Connection 9
   - Operating Steps 14
   - How to operate the projection panel for presentations 16

4. OPERATING THE UNIT AND ON-SCREEN MENU ADJUSTMENTS 17
   - 4.1 IMAGE ADJUST mode 18
   - 4.2 A/V ADJUST mode 18
   - 4.3 DISPLAY mode 19
   - 4.4 OPTION mode 20
   - 4.5 MANUAL SETUP 21

5. REMOTE CONTROL BUTTON OPERRATIONS 23

6. TROBLESHOOTING 30

7. MAINTENANCE 31
   - Installing the Remote control unit batteries 33
   - Transporting the unit 33

8. SPECIFICATIONS 34

SAFETY PRECAUTIONS

- Please be careful when cleaning inside the unit.
- When cleaning the unit by removing the cabinet glass, the fan cover is removed exposing the fan blades. It is very dangerous to do this with the unit powered on. The possibility of pinching a finger in the fan blade is great. Always power off the unit, and disconnect the AC adapter before cleaning.

- Use only authentic accessories and spare parts (interface cables, AC adapters, etc). The supplied accessories are specially designed for use with this unit; never connect components other than those specified.

- Do not attempt to disassemble or repair the unit.

- Take care not to let children swallow the protective caps over the connectors.

SPECIAL NOTES

Thank you for purchasing this SHARP Product. We hope it will give you many years of trouble-free operation. But for the best performance, read this manual carefully. It will guide you in operating your SHARP product.

The Sharp Computer/Video Projection Panel incorporates the latest in Thin Film Transistor Liquid Crystal Display (LCD) technology. While this LCD is capable of producing projected images which are bright and high in contrast, please note that all liquid crystal displays also have very strict maximum temperature limitations. This projection panel should not be used with any overhead projector (or in any environment) which might cause the operational temperature of the LCD to exceed **45**℃ **(113**℉).

This projection panel should only be used with high quality transmissive type overhead projectors. It is not designed to be used with the compact reflective mirror type overhead projectors. For the best colorimetry and brightness, a high luminosity type OHP (overhead projector) using a metal-halide lamp (Approx. 575W) with high cooling ability is recommended.

NOTE

Sharp warrants that the projection panel will provide a 99.99% usable active dot ratio. This means that out of the total of 2,359,296 dots, the projection panel may contain a maximum of 35 inactive dots.
These minute inactive dots may appear illuminated on the display, however, they will not affect picture quality, or the life expectancy of the unit.

This projection panel should not be used in rooms with very bright lighting. For best results, the lights in the room should be dimmed.

FOR YOUR RECORDS

Please record below, the model and serial numbers located on the bottom of the unit. Please retain this information for reference in case of theft or for service repair.

Model number: **QA-2500**

Serial number: _____

Date of purchase: _____

Place of purchase: _____

The following items referred to in this manual are not included with this unit: personal computers, overhead projectors, computer software, and carrying cases. Please contact your Sharp dealer for information on purchasing these items.

1. INTRODUCTION

This Sharp Projection Panel makes it possible to display computer or video images onto a large screen or wall, using an overhead projector (OHP) to illuminate and project the images.

- The LCD display area has 1024(RGB)×768 dots, creating crisp, bright, sharp images. The Projection Panel is compatible with many different types of personal computers and workstations using the cables provided or the optional cables.
- The unit uses an active matrix TFT LCD panel with up to 16,700,000 colors displayed. When the projection panel is placed on an OHP, text, graphics and other visuals produced by a personal computer, workstation, VCR, or other equipment can be enlarged, enabling it to be viewed by large groups. This greatly facilitates presentations in environments such as conferences, seminars, and classrooms.
- On screen menus to allow easy set up.
- An external monitor connector allows an analog computer monitor to be connected for simultaneous display with the projection panel.
- A rear projection function allows the image to be reversed if rear screen projection is required.
- Connecting the optional mouse cable allows control of a personal computer from the remote control unit.
- The remote has learning capabilities, allowing 5 functions to be memorized for control of a VCR, Laserdisc.
- The unit has built-in video which allows NTSC, PAL and SECAM signals to be projected.
- Fitted with built-in speaker, two inputs and one audio output.

2. DESCRIPTION OF MAIN COMPONENTS

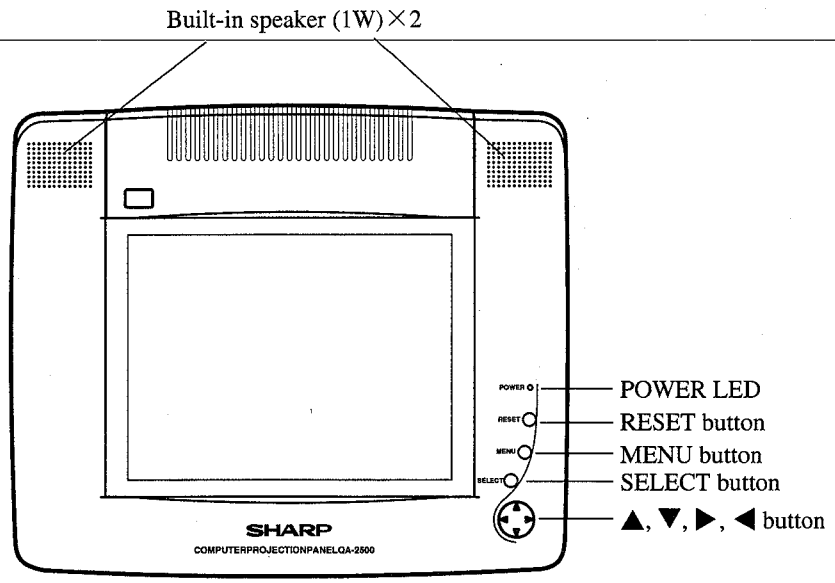
Unpack and check that all of the components are included in the shipping carton. Please keep this Operation Manual for future reference.

Items included are:

- Main unit
- Remote control unit
- VGA/MCGA signal cable
- 13W3 signal cable
- Audio cable (mini-jack -- RCA)×2
- Audio cable (mini-jack -- mini-jack)×1
- AC adaptor
- AC cable
- Four "AA" alkaline batteries for remote control unit
- Operation Manual

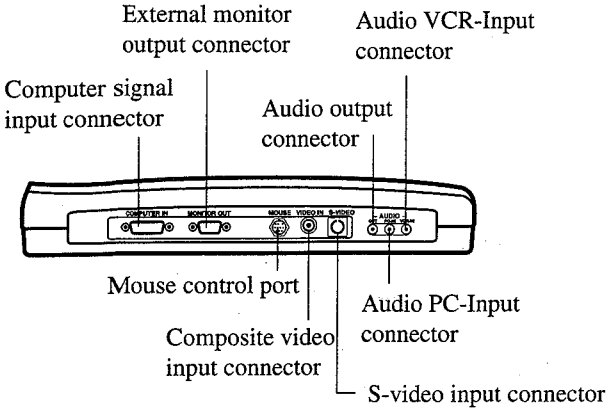
Main unit

Top view

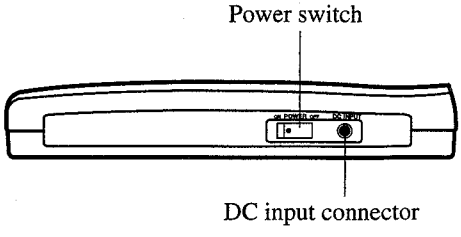


Side view

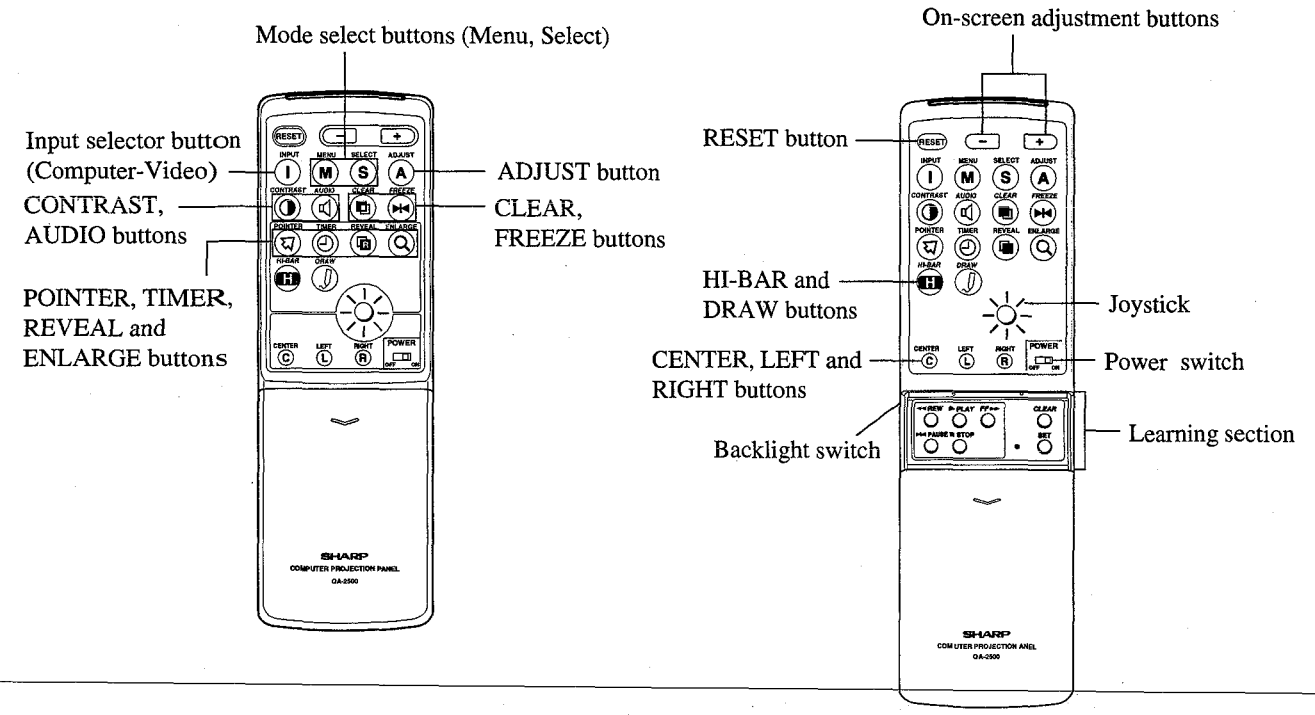
Left



Right



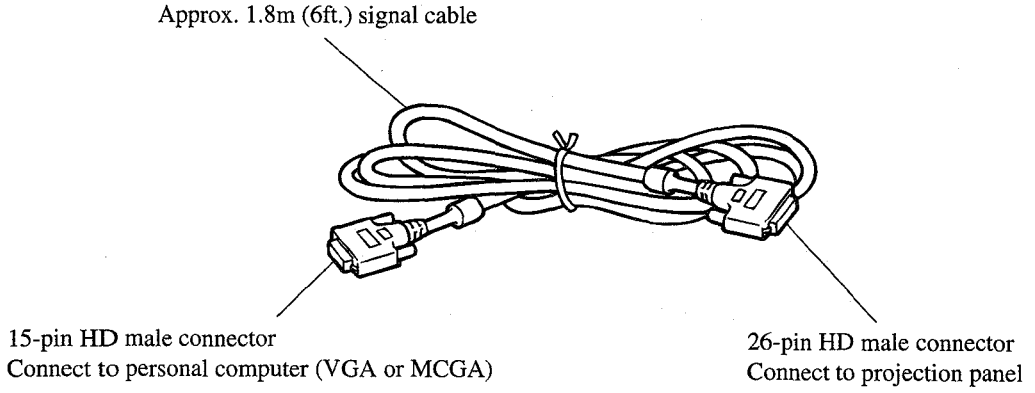
Remote control unit



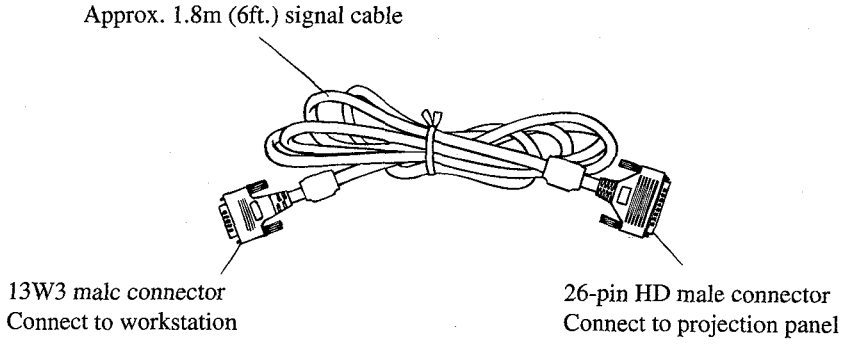
View with cover closed

View with cover open (slide battery cover downwards)

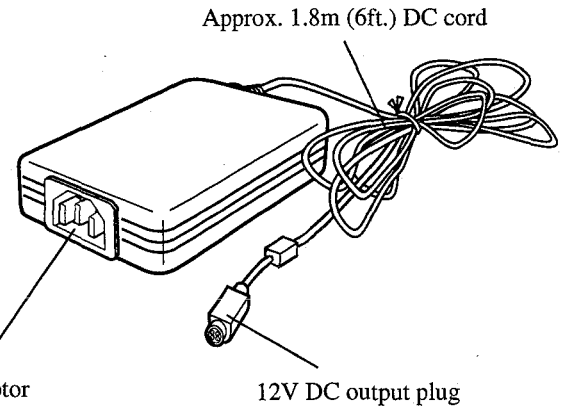
VGA/MCGA Signal Cable (DSOCZ2042YAZZ)



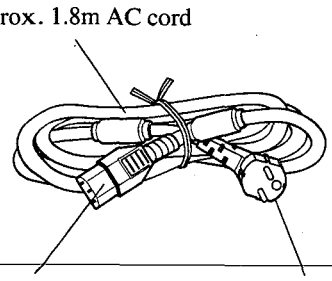
13W3 Signal Cable (DSOCZ2053YAZZ)



AC Adaptor (DADP-2009YAZZ)

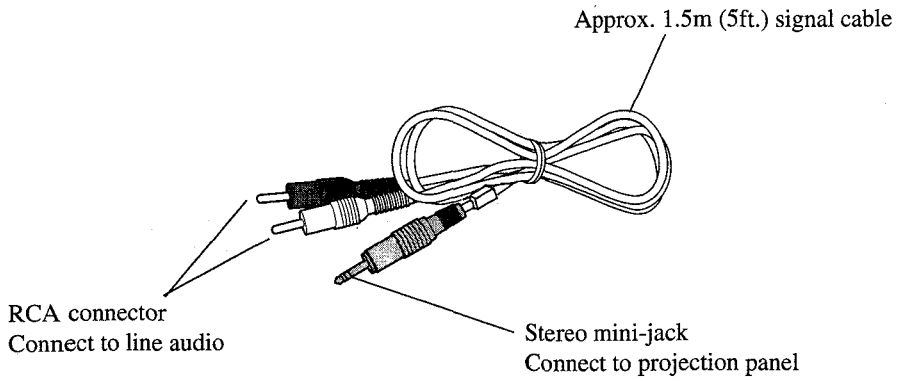


AC Cable (DACCV2005YAZZ)

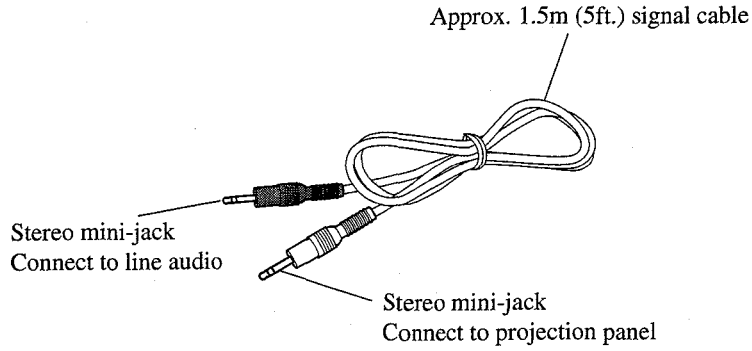


Operation Manual

Audio Cable (DSOCZ2034YAZZ)×2



Audio Cable (DSOCZ2040YAZZ)×1



3. SET UP

Set up the projection panel as follows.

The projection panel should not be used with any overhead projector (OHP) which may cause the panel' s internal LCD to reach a temperature of 45℃(113℉).

Positioning

1) Turn the power ON to the OHP and place it in the best position for projection against a wall or screen. Turn OFF the OHP.

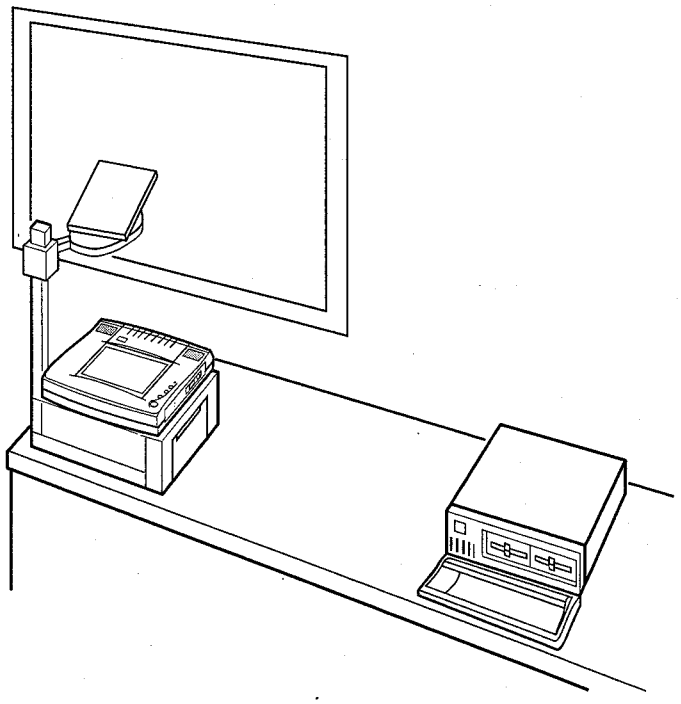
2) Connect your computer in a convenient position next to the OHP.

3) The projection panel should be placed so that the fan intake vent is facing to the wall or screen.

NOTE

While the OHP's power is turned ON, do not leave the projection panel power OFF.

Center the panel's display area with the stage area of the OHP.



Connection

Before making any electrical connections, please make sure that both the OHP and the personal computer are turned off.

NOTE

When connecting or disconnecting cables, always power off the unit first, and hold the cables by the connectors.
Pulling on a cable may well damage the internal connections.

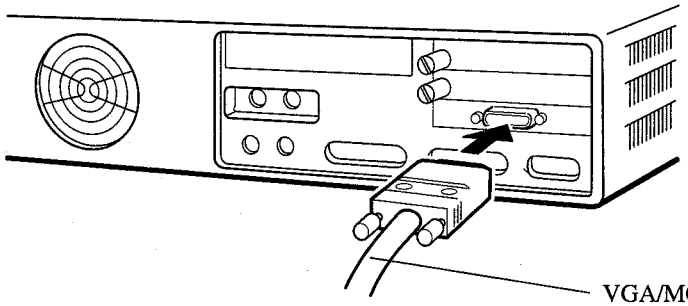
WARNING

When connecting the projection panel to a computer, use only the supplied VGA/MCGA cable, 13W3 Signal Cable or the optional RGB cable. Please contact your local dealer for the RGB cable. Do not use any other cables to connect the projection panel to a computer.

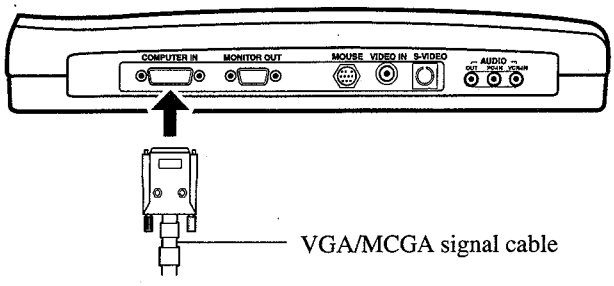
1) Connecting the VGA/MCGA Signal Cable to an IBM® PS/2 or Compatible Computer

The VGA/MCGA signal cable has a 15-pin HD male connector on one end and a 26-pin male connector on the other end.

(1) Plug the 15-pin connector into the 15-pin monitor output connector on the computer.
(2) Fasten the cable with the thumbscrews.



(1) Plug the 26-pin connector end of the VGA/MCGA cable to the COMPUTER IN connector on the projection panel.
(2) Next, fasten the cable with the thumbscrews.



2) Connecting to an Apple Computer or Workstation Compatible with the Projection Panel

If the monitor output connector of the Workstation is 13W3 type, use the attached 13W3 signal cable.
The following RGB cables are available as options from your local dealer.

- Macintosh signal cable (High resolution type)
- Macintosh signal cable (Low resolution type)
- Workstation signal cable (BNC type)

Use the appropriate cable to connect the video output connector on the computer to the COMPUTER IN connector on the projection panel.

NOTE

For some Apple computers compatible with the projection panel, such as the Macintosh II, a video card is necessary. In such cases, contact your local dealer.

3) Connecting a Laptop or Note book computer

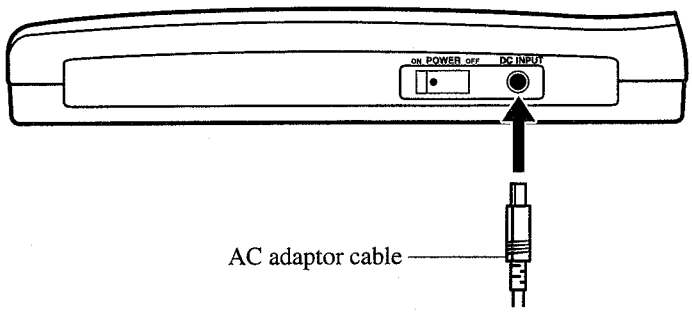
Most Laptop and Notebook computers have "External Monitor Ports". Please refer to your computer's operation manual for instruction how to connect and access this port. Some software command or switch may have to be set to view images on the projection panel.

NOTE

The projection panel can not be directly connected to the Macintosh portable computer. Do not connect the projection panel to the Macintosh portable computer. Serious damage to the computer or the projection panel could result.
Third-party adaptors are available for the Macintosh portable computer and PowerBook 100/140/145/170 computers. These are available from a third party vendor. Please contact your local dealer for more information.

4) Power Supply Connection

Plug in the DC output plug of the AC adaptor into the DC INPUT socket on the projection panel (see below).
Make sure that the panel's power switch is in the OFF position, then plug the AC adaptor into an AC outlet.



WARNING

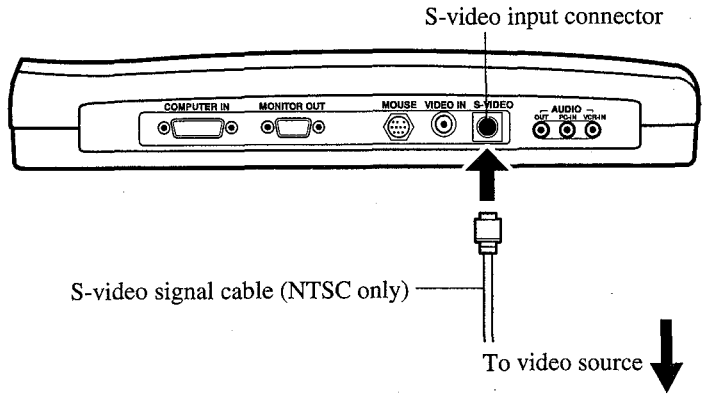
Do not use any other type of AC adaptor with the projection panel. This AC adaptor is a filtered power supply with a safety standard listing and should not be replaced by any other adaptor. This projection panel's AC adaptor is not compatible with the QA-1750 or QA-1500 AC adaptor.
Connet the DC output plug of the AC adaptor into the DC INPUT before plugging the AC adaptor into an AC outlet.

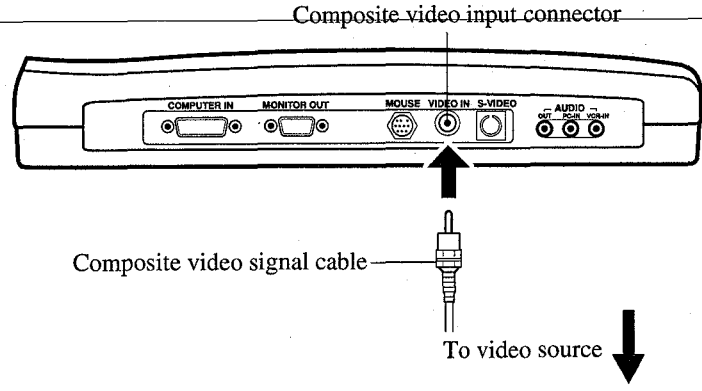
5) Video input connection

Connect the video signal to the S-video input connector or composite video input connector. If signals are input to both connectors, the S-video signal takes precedence. Then press the I (INPUT) button on the remote control to switch between the PC and video input on the projection panel.

This unit supports NTSC, PAL and SECAM video standards, and detects the type from the input signal, switching automatically.

The video adjustments are preset at the factory. Adjustments can be made by using the A/V Adjust Menu built into the panel. For video adjustments please refer to page 18.





NOTES

To display NTSC, PAL, or SECAM on the projection panel, the video signal must meet the following requirements. (If not, improper display will be obtained.)

(1) It must be a composite video signal complying with system M (NTSC), systems B, G, H and I (PAL), or system B, G, H, D, K and L(SECAM), and the signal level must be 1.0V peak-to peak.

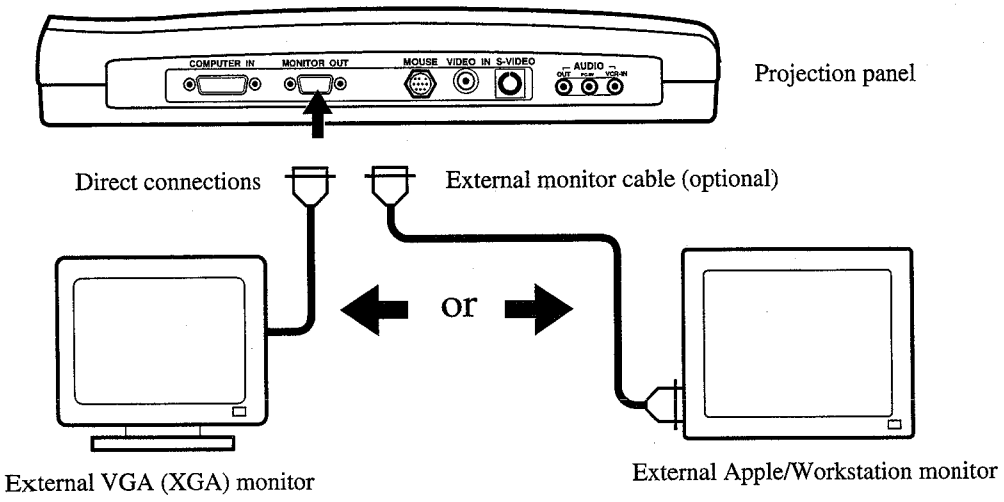
(2) S-video signals are supported by NTSC signals only, and the Y signal level must be 1.0V peak-to peak and C signal level must be 286mV peak-to peak.

(3) The output impedance must be 75 Ω.

(4) When video input of PAL or SECAM signals from sources such as VCR tape are not received properly, switch from the Auto mode to the fixed PAL or SECAM mode in the Display Mode menu. (See page 19.)

6) External monitor connection

Connect your computer monitor to the external monitor output connector, to simultaneously view images on the external monitor and projection panel.



NOTES

When using the projection panel with an external VGA/MCGA monitor, connect the monitor using the cable supplied with it. To use the projection panel connected to the monitor of an Apple Computer or workstation, one of the following optional cables is required.

- External Macintosh monitor cable (High resolution type)
- External Macintosh monitor cable (Low resolution type)
- External workstation (BNC) monitor cable
- External workstation (13W3) monitor cable

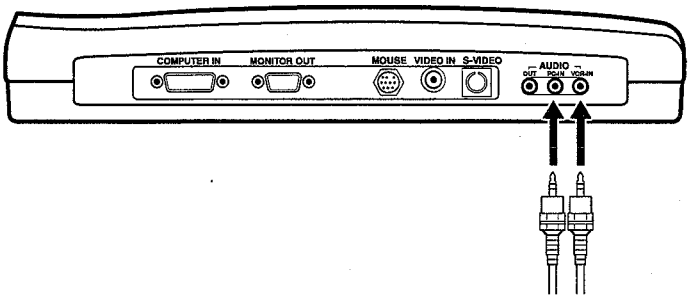
For the optional cables, contact your local dealer.Before using any other type of monitor, carefully check the monitor's interface specifications and make sure that they match the specifications of the projection panel's interface.

The external monitor output will only display an analog computer input signal. It will not display a digital or video input signal. To split the composite video signal, use a video distribution amplifier. This is available from your local dealer.

7) Audio signal connectors

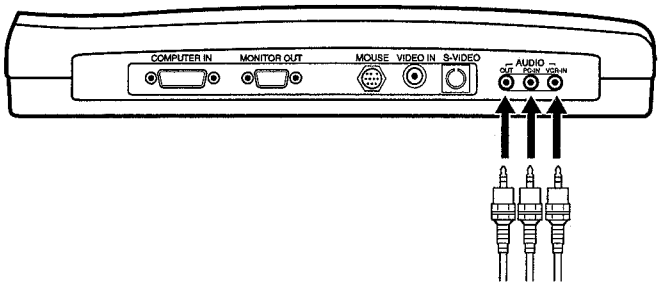
There are two separate mini-jacks for audio signal input. For audio signals from VCR or similar device to the VCR-IN connector, and connect the audio signal from a computer to the PC-IN connector.
The PC/VIDEO mode selection determines which audio input is used: when PC is selected, the audio is input from the PC-IN connector, and when VIDEO is selected, the audio is input from the VCR-IN connector. It is also necessary to use the A/V ADJUST mode in the on-screen menus to set the AUDIO CTL item to ON.

- When using the built-in speaker
  Connect a stereo mini-jack cable to the PC-IN or VCR-IN mini-jack.



Connect the audio source to one of the audio input connectors on this unit.

- When using external speaker
  Make the audio input connections, then connect the external speakers through an audio amplifier to the audio output connector.



NOTES

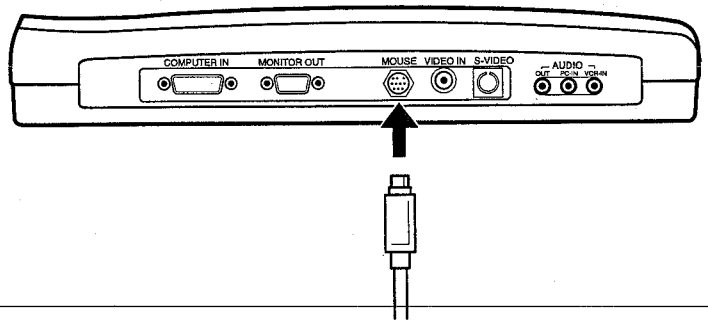
1) Connecting to the projection panel audio output automatically mutes the built-in speaker.
2) If a monaural signal is connected, the audio output will appear on only one of the left and right channels.
3) If a microphone or similar device with a low signal level is connected, the speaker will not produce any sound. Always use an appropriate amplifier for the input signal.

8) Mouse cable connection

You can use the remote control unit to do mouse operations on the connected computer. To do so, use one of the following optional mouse cables to connect the mouse port on the projection panel to the mouse port on the connected computer.

- Apple Mouse cable
- PS/2 Mouse cable
- Serial Mouse cable
- Unix Mouse cable
- DEC Mouse cable

Plug the 10-pin end of the supplied mouse into the mouse port on the projection panel, and plug the other end into the mouse port on the connected computer. (See page 24 for operating procedures.)



Operating Steps

Before turning power on to the equipment, please note the following precautions.

The projection panel should not be used with any OHP which may cause the panel's internal LCD to reach a temperature of 45℃ (113˚F) or higher.

NOTE

To ensure proper cooling, make sure that the fan ventilation holes are not obstructed while using the projection panel.

To prevent the projection panel's LCD from reaching this maximum temperature, a very effective cooling fan is built into the panel. **This fan only operates when the projection panel's power switch is turned ON.** Therefore, make sure that the power switch has been turned on first and then turn on the power switch of the OHP.

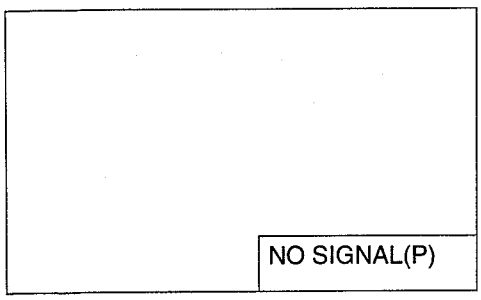
WARNING

[ ] This symbol flashes on and off when the projection panel's internal temperature exceeds a certain limit, then disappears when the internal temperature drops again. (Please check panel if this symbol appears.) If the symbol appears, immediately check whether the fan motor has stopped or the ventilation slots are blocked. Excessive heat can destroy the LCD panel if the unit is used for too long in this condition. You may need to turn the power OFF momentarily to verify that your OHP is functioning properly. Make sure that your OHP does not exceed the temperature rating of the projection panel.

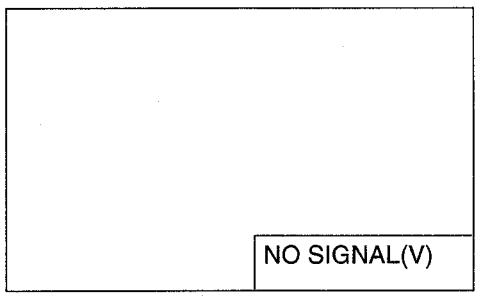
Because the projection panel is directly compatible with many systems, it has been provided with a built-in **Automatic Setup System** to enable correct display for most display signals.

- 1024-line displays (1280×1024)
  Of the 1280×1024 pixel image, a 1024×768 pixel portion is displayed uncompressed.
- 870-line displays (Radius Precision Color PRO24X, 1152×870)
  Of the 1152×870 pixel image, a 1024× 768 pixel portion is displayed uncompressed.
- 768-line displays (XGA 1024×768)
  The 1024×768 pixels are displayed unaltered.
- 624-line displays (Radius Precision Color PRO24X, 832×624 mode)
  The 832×624 pixels are displayed centered in the panel.
- 600-line displays (SVGA 800×600)
  The 800×600 pixels are displayed centered in the panel.
- 480-line displays (VGA, Macintosh II, Macintosh LC; 640×480)
  The 640×480 pixels are displayed centered in the panel.
- 400-line displays (VGA, MCGA; 640×400)
  The 640×400 pixels are displayed centered in the panel.
- 350-line displays (VGA, MCGA; 640×350)
  The 640×350 pixels are displayed centered in the panel.

(1) Make the appropriate connections before powering on.
(2) Turn on the projection panel and make sure that the cooling fan is working. (As an indication that the panel has been properly turned ON, the Red LED power indicator will light.)
(3) Turn power "ON" to the OHP.
If a computer or video source is not connected to the projection panel, a no-signal display appears in the lower right corner on the projected screen.



COMPUTER MODE



VIDEO MODE

(4) Turn on the PC to display text or graphic images on the projection panel. Focus the OHP so that the images projected are clearly visible on the overhead projector screen.
(5) Press the ◑ (Contrast) button on the remote control and use the +/- mode adjust buttons to adjust the contrast of the projected image.
(6) Press the I (Input) button on the remote control to switch between the computer and video signal inputs according to the computer or video signal.
(7) At the end of the presentation the OHP should be turned off first. Then the projection panel may be turned off.

WARNING

1) Do not leave the projection panel turned off while the OHP is ON. The heat from the OHP lamp may damage the display if the panel's fan is not operating.
2) Do not place paper or transparencies on the cooling air inlet of the projection panel or block it.

How to operate the projection panel for presentations

NOTE

When using "High Gain" screen, interference may appear along the edge of the image .

- To clear the screen during a presentation, press the (Clear) button on the remote control unit. Press the a button again to restore the image.
- Use the (Enlarge) button on the remote control to enlarge the screen.

NOTE

The enlargement function does not operate at resolution exceeding 1024×768.

Once in the enlarge mode

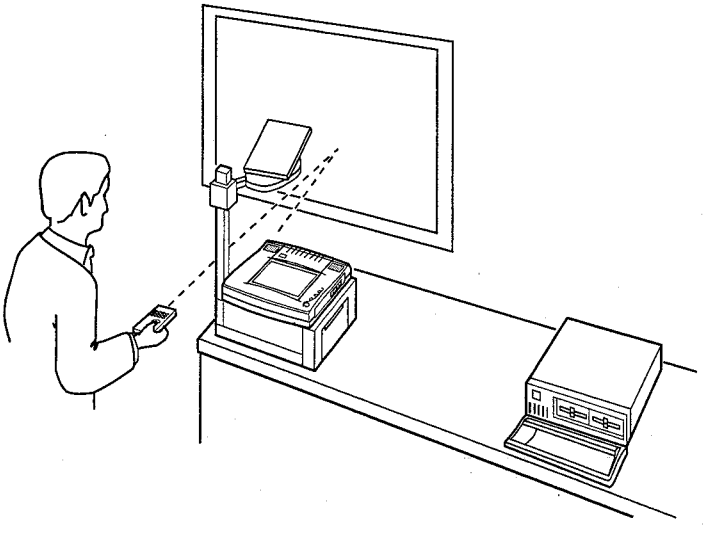
In case of the resolution signal of 800×600 to 1024×768, use the JOYSTICK on the remote control to shift the remaining portion of the image into view. Press the (ENLARGE) button again to return to normal mode.

- Pressing the REVEAL button on the remote control unit covers the whole screen image with a black mask. Using the joystick, it is then possible to move the mask vertically, to reveal the screen image progressively from the top. The function ends when the mask is completely removed from the bottom of the screen. While the "reveal" operation is in progress, it is not possible to move the mouse pointer with the joystick, but this can be done with the remote control unit L (Left), R (Right) and C (Center) buttons.
- Pressing the (Freeze) button freezes the display of the current image. Upon selecting this mode, "FREEZE" appears on the screen for several seconds and then disappear .

NOTE

Remote Control Operation

The signal from the remote control is received by the projection panel on the side which faces the projection screen. To operate the panel from behind the OHP, point the remote control towards the screen. The infrared signal will be reflected by the screen towards the projection panel and all functions may be controlled.



4. OPERATING THE UNIT AND ON-SCREEN MENU ADJUSTMENTS

The projection panel automatically adjusts the LCD display area according to the computer video signal. The projected image can be modified by selecting screen menu options with the projection panel's control buttons.
The projection panel has the following control buttons: [RESET], [MENU], [SELECT], [▲], [▼], [◀], [▶]. The following is a description of how these functions work.

RESET

Pressing the RESET button sets the projection panel's adjustable modes to the default setting corresponding to the computer or video source currently connected. When this button is pressed, the display mode is set to Normal.

ALL RESET

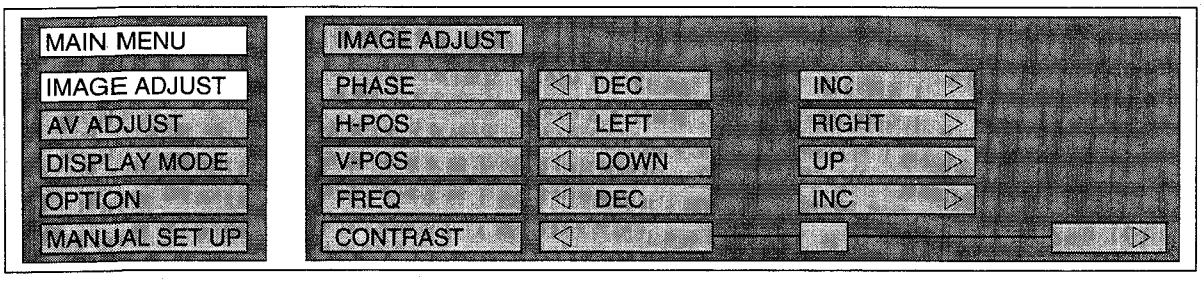
Press RESET and immediately press the SELECT and ▼ buttons simultaneously. This selects default settings for all of the panel's compatible computer or video sources and restores the Input mode selection to the COMPUTER setting.
When the ALL RESET operation is executed, an "ALL RESET" on-screen display will appear in the lower right corner of the image for several seconds, and then disappear.

Computer / Video selection

On the Panel: To switch the Computer/Video mode selection to the Computer setting, press and hold the SELECT button, then press the ▼ button. To switch the Computer/Video mode selection to the Video setting, press and hold the SELECT button, then press the ▲ button.
On the Remote: Press the "I" button to switch input.

MENU

Press the MENU button to enter the adjustment mode.

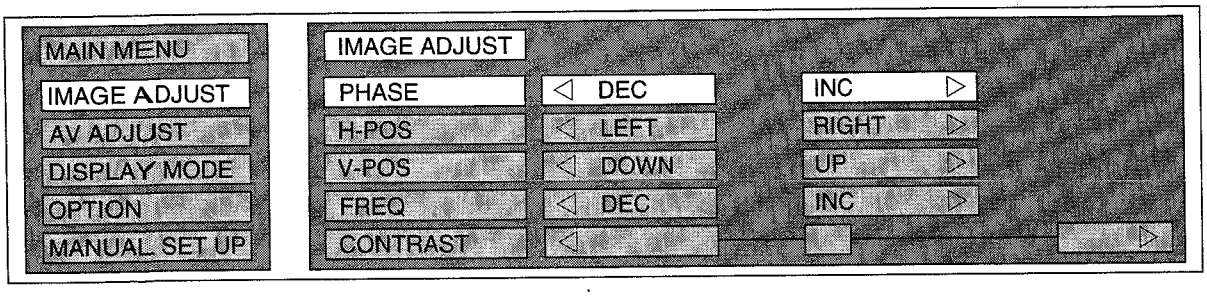


Use the ▲ and ▼ buttons to shift the highlight box over the item to be adjusted and displays the appropriate menu. Press the SELECT button to activate the highlighted menu.

- IMAGE ADJUST: This mode is used for adjustments of screen flicker, vertically and horizontally movement, frequency, and contrast.
- A/V ADJUST: This mode is used for adjustments of the video image and audio control.
- DISPLAY MODE: This mode is used for selecting the display type, video mode, computer or video, front or rear projection, and on-screen pointer type.
- OPTION: This mode is used for selecting the timer mode and setting the parameters for the highlight bar.
- MANUAL SETUP: This function allows the computer setup timing to be set manually.

4.1 IMAGE ADJUST mode

1) Use the SELECT button or ▲ ▼ buttons to shift the highlight box over the item to be adjusted.

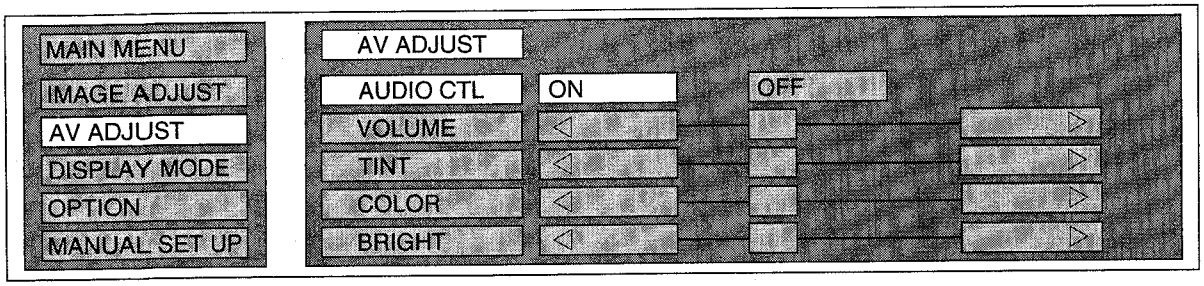


2) Use the ◀ and ▶ buttons to change the setting value.

	Meaning	Pressing ◀	Pressing ▶
PHASE	Adjust screen flicker.	Decreases	Increases
H-POS	Adjust horizontal position.	Shifts left	Shifts right
V-POS	Adjust vertical position.	Shifts down	Shifts up
FREQ	Adjust the frequency.	Decreases	Increases
CONTRAST	Adjust the contrast.	Decreases	Increases

4.2 A/V ADJUST mode

1) Use the SELECT button or ▲ ▼ buttons to shift the highlight box over the item to be adjusted.



2) Press the ◀ and ▶ buttons to change the setting value.

Item	Meaning	Pressing ◀	Pressing ▶
AUDIO CTL	Switch the built-in speaker or AUDIO output on and off.	ON/OFF selection	
VOLUME	Adjust the volume from the built-in speaker or external speakers.	Decreases	Increases
TINT	Adjust the picture hue.	Becomes more purple	Becomes greener
COLOR	Adjust the saturation of the image.	Decreases	Increases
BRIGHT	Adjust the brightness of the image.	Decreases	Increases

NOTE

The TINT adjustment is for NTSC signals. Tint has no effect in PAL and SECAM modes.
The message "INVALID" flashes in the upper right corner of the screen if you attempt to adjust TINT in other than the NTSC mode.
The COLOR, BRIGHT and TINT adjustments are only possible for VIDEO signals.

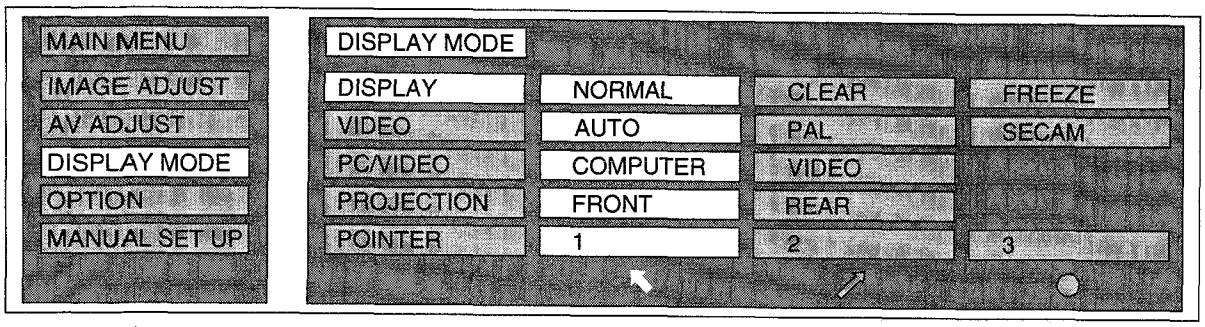
NOTE

The system automatically enters the muted mode as follows.

- During clear and freeze operations.
- There is no video signal.
- During the display of the Audience Timer.

4.3 DISPLAY mode

1) Use the SELECT button or ▼, ▲ buttons to shift the highlight box over the item to be adjusted.



2) Press the ▶ and ◀ buttons to change the setting value.

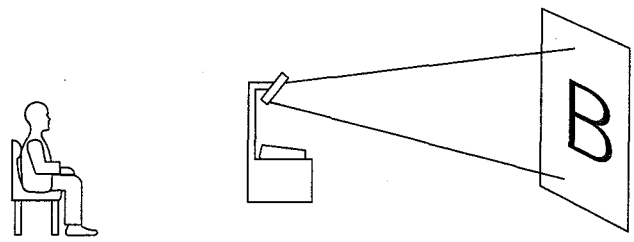
DISPLAY: Select NORMAL, CLEAR (white screen) or FREEZE.

VIDEO: Select AUTO (Automatic Video recognition), PAL (fixed PAL mode), or SECAM (fixed SECAM mode).

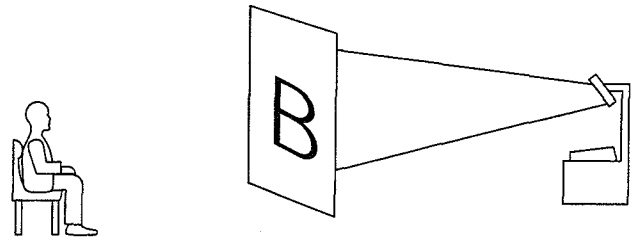
PC/VIDEO: Computer or Video selection

PROJECTION: Select front or rear projection.

(1) Front-projection (projector on the same side of the screen as the audience)



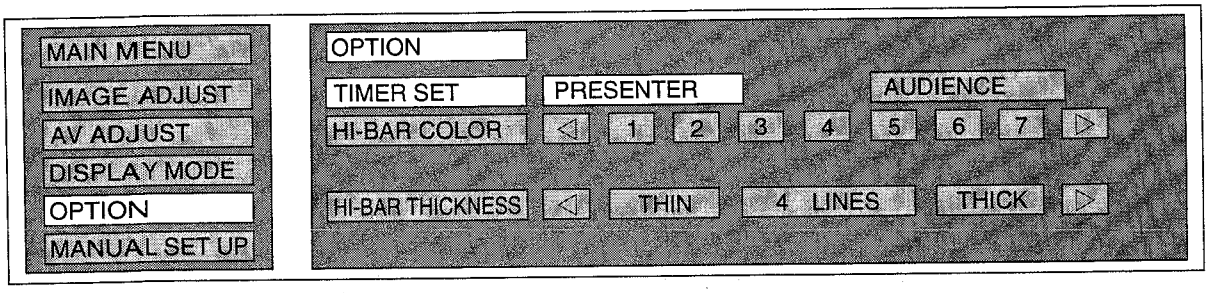
(2) Rear-projection (projector behind the screen)



POINTER: Select the pointer symbol used on the screen.

4.4 OPTION mode

Use select button or ▲ ▼ buttons to shift the highlight box over the item to be adjust.

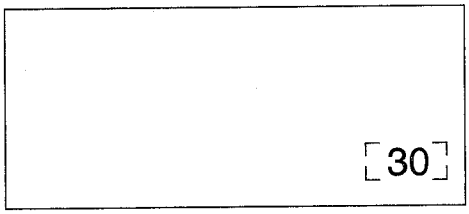


1) TIMER SET

A countdown timer function has been incorporated with the unit. This countdown timer offers two modes of operation for the Presenter and Audience.

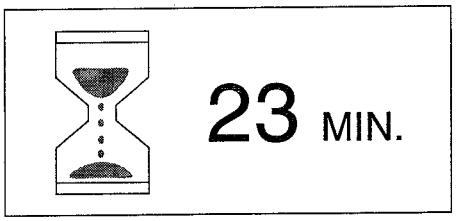
(1) Presenter Timer

Use this mode to keep the pace of your presentation. For example if you have only 30 minutes to present your information, set the timer to 30 minutes by pressing the time button on the remote (see page 26 for details) and it will automatically start to countdown. This timer may be called up onto the screen at any point during your presentation to display the remaining time. This will help you to judge the pace at which you are presenting. The Presenter timer will be displayed in the lower right hand corner of the screen for 3 seconds and then disappear. The Presenter timer will be automatically displayed when 30 minutes, 15 minutes, 5 minutes, or 0 minute elapses while setting the timer.



(2) Audience Timer

Use this mode to set start or break time between sessions (see page 26 for detailes). There will be a full screen display of an hour glass and time in minutes. This may be useful to indicate the start time of a presentation. When the timer counts down to zero minutes the hour glass display will disappear and reveal your computer or video screen. This will indicate to the audience that the presentation will start. The Audience timer will work even when there is not a computer or video signal applied.



NOTE

Both timers allow a maximum countdown time of 45 minutes.

2) HI-BAR COLOR

Select the color for the Hi-BAR using the appropriate number from 1 to 7.

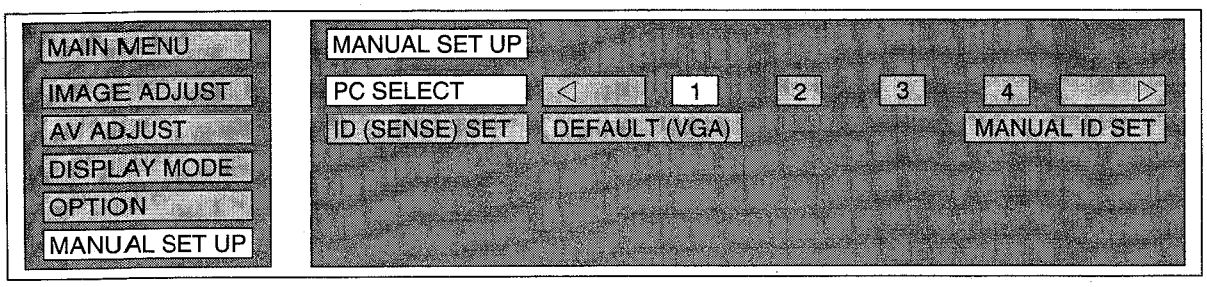
3) HI-BAR THICKNESS

Select the thickness for the Hi-BAR from 1 to 15 lines, using the ◀ and ▶ buttons.

4.5 MANUAL SETUP

1) COMPUTER SELECT

With respect to the computer timing, when automatic discrimination is not possible, timing data approximation to the signal is selected by using number. Use the most appropriate data number.

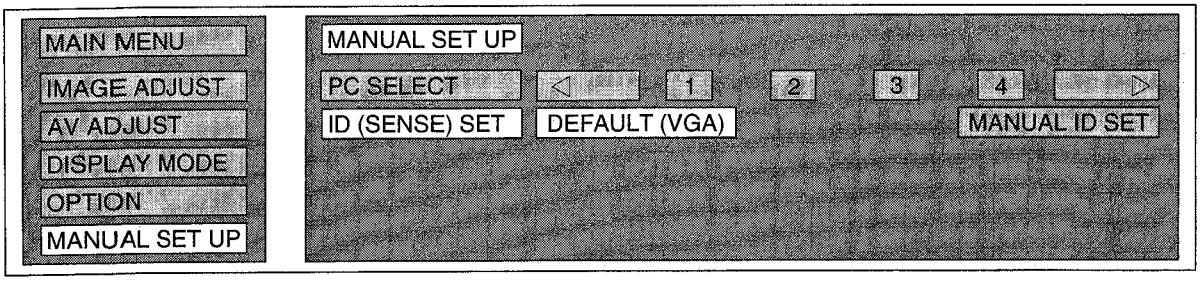


2) ID (SENSE) SET

Please note that the unit will automatically recognize most computer input signals and configure the settings for you. Only in the case where the default settings are not correct will you need to use the manual ID set feature.

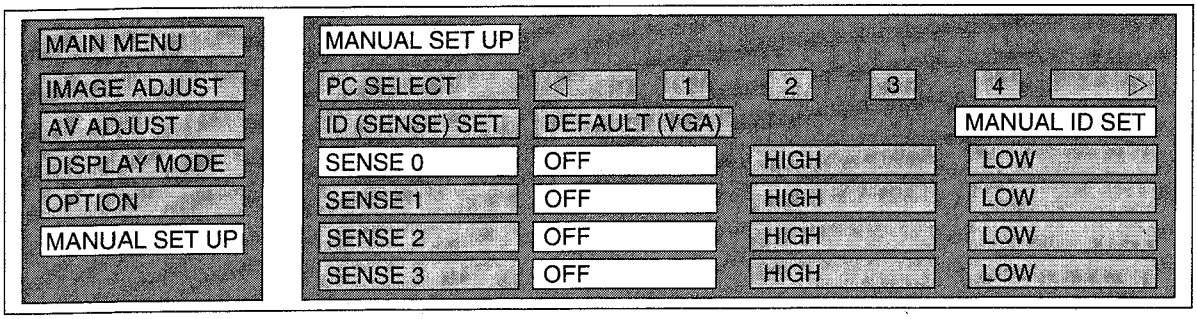
If the unit must be configured manually, press the "MENU" button on the front of the panel and using the SELECT, ▲, ▼, ▶ and ◀ buttons. "MANUAL SETUP" the QA-2500 using the choices provided. Depending on the RGB cable supplied with this unit or an optional cable being used, one of the following Menus will appear.

(1) When the RGB signal cable has not been connected or VGA cable has been connected, the following menu will appear.

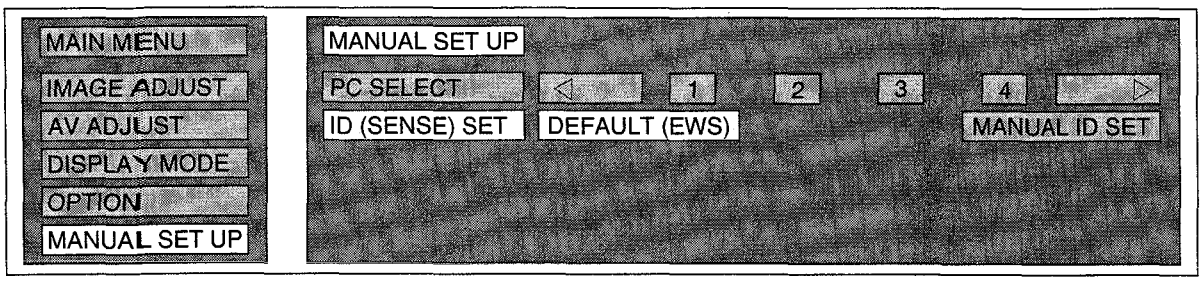


To manually configure the projection panel for fitting a computer, first you must obtain the settings for each of the 4 "Sense" signals (data lines in the input cable) from the computer manufacture. Each Sense line (0-3) will have a setting of either "HIGH" (+5V), "LOW" (0V), or "OFF" (OPEN). By using the "MANUAL SETUP" menu, select "MANUAL ID SET", and use the SELECT, ▲, ▼, ▶ and ◀ buttons to enter corresponding value for each the 4 Sense lines.

"MANUAL ID SET"

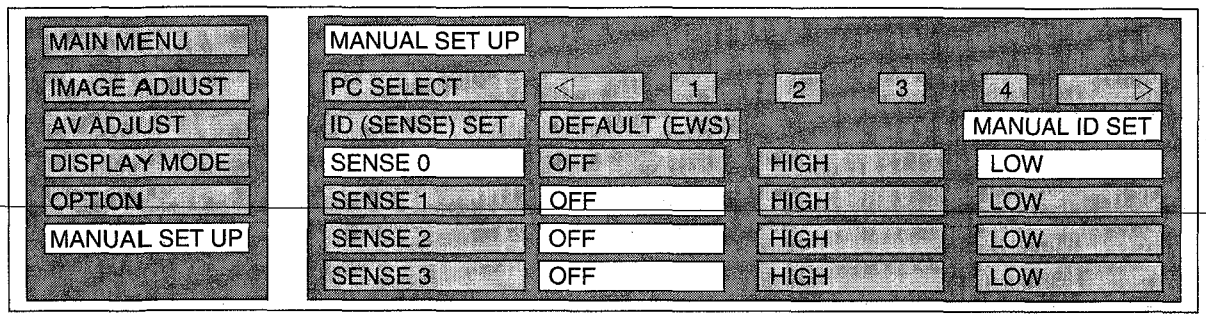


(2) When the 13W3 RGB signal cable has been connected, the following menu will appear.

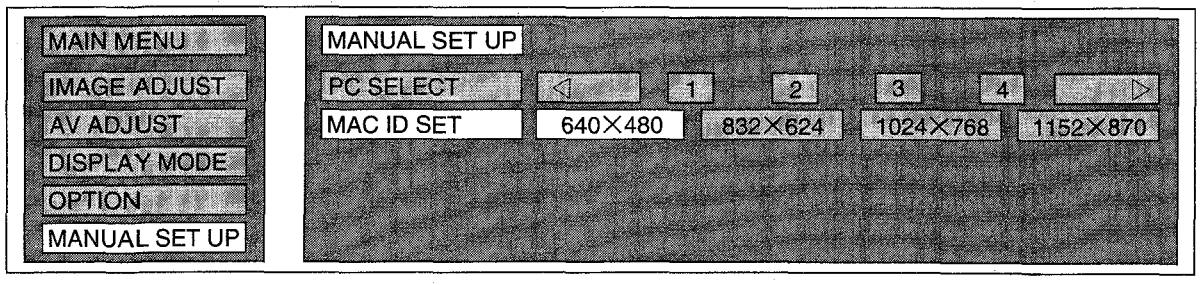


To manually configure the projection panel for fitting a computer, first you must obtain the settings for each of the 4 "Sense" signals (data lines in the input cable) from the computer manufacture. Each Sense line (0-3) will have a setting of either "HIGH" (+5V), "LOW" (0V), or "OFF" (OPEN). By using the "MANUAL SETUP" menu, select "MANUAL ID SET", and use the SELECT, ▲, ▼, ▶ and ◀ buttons to enter corresponding value for each the 4 Sense lines.

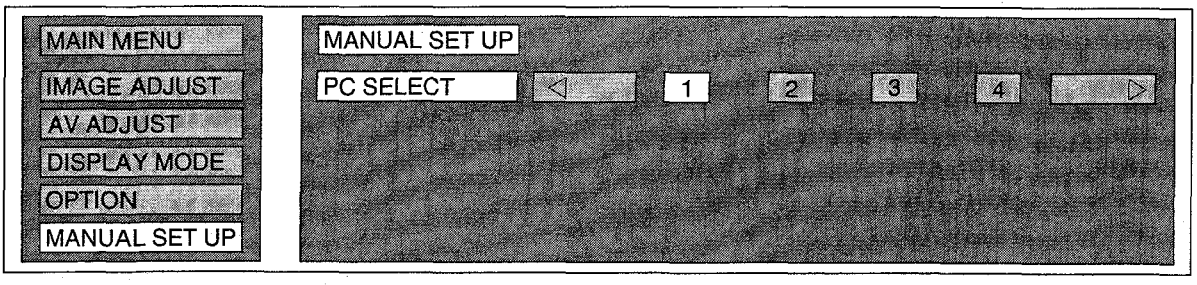
"MANUAL ID SET"



(3) When the Macintosh RGB signal cable has been connected, the following menu will appear.
The box of the set resolution will be highlighted. To set another resolution, select the box of the resolution you want to set, using the SELECT, ▲, ▼, ▶ and ◀ buttons.
At that time, the selected box will be highlighted.



(4) When the BNC RGB cable has been connected, the ID (Sense) setting is not required.
The following will appear.



5. REMOTE CONTROL BUTTON OPERATIONS

The remote control unit has backlit buttons, making them easy to see in dark rooms.
The remote control unit allows all the necessary operations during a presentation to be carried out from a position away from the projection panel.
Before using the remote control unit, set the POWER switch on the remote control unit to ON.

Remote control unit operation

- RESET, MENU and SELECT have the same function as on the main unit.
- The setting of the menu screen can be executed by the pointer operation through the joystick and the L button.
- A (Adjust), (Audio), (Clear), (Contrast) and (Freeze) provide functions which can be carried out using the main unit on-screen menu, but since these are frequently used operations they provide direct access to the operations without needing to display a menu.
- I (Input), (Enlarge), (Timer), (Pointer), (Reveal), the joystick, L (Left), R (Right), C (Center), (HI-Bar), (Draw) and the learning buttons inside the battery cover are functions provided only on the remote control unit.

+, − These buttons are used for the item selection and data setting, in the on-screen menu, and data setting of the functions which correspond to the remote control buttons.

A (Adjust)

This button cycles through the PHASE (phase), H-POS (horizontal position), V-POS (vertical position), and FREQ (frequency), adjustments in order as follows.

PHASE → H-POS → V-POS → FREQ → ⟨ Quit / Adjust mode ⟩ → PHASE →···

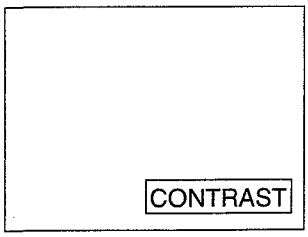
The adjustments are made with the + and - buttons.

(Clear)

This is the clear screen mode.
To stop projecting an image or clear the screen without turning the panel's power off, press the (Clear) button on the remote control. To restore the image and resume the presentation, press the (Clear) button again.
When the clear screen mode is selected, "CLEAR" will appear on the screen for several seconds and then disappear.

(Contrast)

Use the contrast adjustment to set the contrast of the projected image.
Press the (CONTRAST) button on the remote control unit, then use the +/- buttons to adjust the contrast for the best image.



+: increases contrast
-: decreases contrast

Pressing the (Contrast) button on the remote control brings the CONTRAST on-screen display to the screen. After adjusting for best display, press the (Contrast) button again to clear the CONTRAST display.

(Freeze)

Pressing the (Freeze) button freezes the display of the current image. Upon selecting this mode, "FREEZE" appears on the screen for several seconds and then disappears.

NOTE

The Freeze function does not pause the computer or VCR.

I (Input)

This button changes the input signal, cycling through the following.

Computer → Video → Computer →···

🔍 (ENLARGE)

Pressing the 🔍 (Enlarge) button, while in normal mode, switches to enlarged mode.

When the Enlarge mode is selected, an "ENLARGE" on-screen display appears on the screen in the lower left hand corner for several seconds and then disappears.

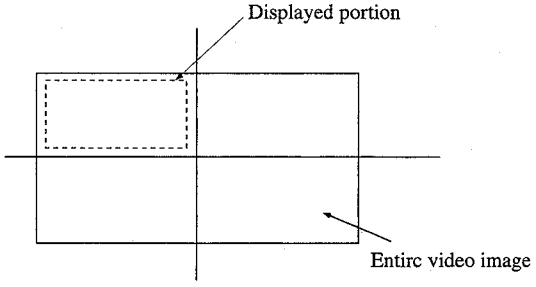
Press the 🔍 (Enlarge) button to return to the normal mode.

1) 800×600～1024×768 resolution signals

The screen displayed in the normal mode is enlarged to double size.

When this mode is selected, the display zooms in on the upper left portion of the image.Use the JOYSTICK to move the displayed portion about the whole video image.

Projection panel display



2) 640×480 resolution signals

The centered image is expanded to full screen.

3) Video signals

The centered image is expanded to full screen.

4) 1280×768 or 1152×870 resolution signals

The enlarge mode cannot be used.

NOTE

The expanded video image may not display at the same quality level as nomal video mode.

(Pointer)

This button causes a pointer to be displayed on the projected screen, and it is then possible to move the pointer about the screen, using the joystick. Pressing the POINTER button again makes the pointer disappear.

At this point, the message "POINTER" appears in the lower right corner of the screen for several seconds and then disappears.

By making the pointer active while the menu screen is displayed, it is possible to specify the menu setting position with the joystick then make menu settings using the L (LEFT) button.

NOTES

1) The pointer function is only available using the remote control unit. (This function is not available using the main unit.)
2) It is possible to select the shape of the pointer, using the DISPLAY MODE function in the on-screen menu.
3) The pointer function can not be used in combination with a mouse. (Selecting the pointer function causes the mouse function to be disabled.)

Mouse function, RIGHT, LEFT and CENTER

This feature allows the unit remote to control the Mouse function for serial, PS/2, Sun unix, DEC, or ADB (Apple Desktop Bus) type mouse controllers.

When using the mouse function, it is first necessary to connect the Computer mouse port to the mouse port on the main unit using the appropriate mouse cable. The operating procedure is as follows.

The mouse function is enabled by default. The mouse function is therefore effective except when using the pointer or enlargement functions, or the scroll functions for 1280×1024 and 1152×870 displays.

1) Check that the mouse pointer is displayed on the screen.
2) Use the joystick to move the mouse pointer in the desired direction.
3) It is possible to effect mouse button control on the Computer by using the LEFT, RIGHT and CENTER buttons.
   LEFT button: Corresponds to the left mouse button.
   RIGHT button: Corresponds to the right mouse button.
   CENTER button: Corresponds to the center mouse button.

NOTES

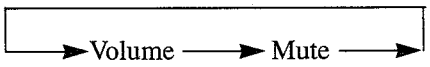
1) The mouse function is only available using the remote control unit.
2) Compatibility
   - Apple: Mac II series, Quadra series, MAC LC series
   - IBM: PS/1, PS/2, PS/55
   - IBM: Serial Mouse (1200 Baud only)
   - Sun unix Mouse
   - DEC Mouse
3) Some PS/2 mouse ports may have different protocols. In this case the mouse will not operate. If you have identified this to be true, please use the serial port instead. You may have to refer to your Computer manual for connecting a mouse to the Serial Port.
4) When using the mouse pointer function, the connected computer must be powered on after powering on the projection panel. Otherwise, you must reset the computer after powering on the projection panel.
5) On a Computer for which mouse settings can be made, if you set the interval for a double click too short, it may not be possible to use the double click function on the remote control unit of this unit.
6) Mouse functions may not work while the display is being updated.
7) When using the mouse pointer function with a MAC PowerBook ADB mouse, connect the mouse cable and the RGB cable to the PowerBook and computer projection panel with the power of both units turned off. Then turn the power of the computer projection panel on. Wait for the "NO SIGNAL" message to appear on the screen of the computer projection panel. Then turn the power of the PowerBook on.
8) Until the completion of the ADB mouse setup procedure on the PowerBook (about 20 seconds), the button operation on the computer projection panel will be inhibited. If either the PowerBook or the computer projection panel is turned off, then the other unit must also be turned off and the procedure in Step 7 must be done again.

High resolution displays

For signals with resolutions such as 1280×1024 or 1152×870 which exceed 1024×768, a portion of the image 1024×768 pixels is displayed uncompressed.
Pressing the ENLARGE button enables the joystick to scroll the visible area of the image with the joystick. At this point, the indication "SCROLL" appears continuously in the lower right corner of the screen.
Pressing this button once more clears the "SCROLL" indication, and the joystick control returns to mouse operation. It is then not possible to scroll the visible area.
When using a high resolution signal, such as a 1280×1024 or 1152×870 pixel image, the enlargement function does not operate.

(Audio)

Pressing this button cycles through the following audio functions.



Volume function: This adjusts the volume of the internal speaker or external audio system, and the message "VOLUME" appears in the lower right corner of the screen for several seconds and then disappears. However, if the AUDIO CTL item in the menu screen is set to OFF, this adjustment is not possible, and the message "MUTE" appears in the lower right corner of the screen for several seconds.

Mute function: This mutes the internal speaker or external audio system, and the message "MUTE" appears in the lower right corner of the screen continuously.

If any other button is pressed, this ends the volume function or mute function.

However, if the AUDIO CTL item in the menu screen is set to OFF, even when the mute function is ended, there is no audio output.

(Reveal)

Pressing this button covers the whole screen image with a black mask, and the message "REVEAL" appears in the lower right corner of the screen for several seconds and then disappears. Using the joystick, it is then possible to move the mask vertically, to reveal the screen image progressively from the top.

While the "reveal" operation is in progress, the RIGHT, LEFT and CENTER buttons operate the mouse function, but it is not possible to move the mouse pointer with the joystick.

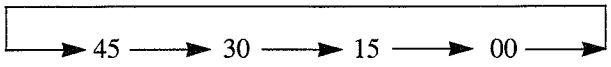
Press this button again, or completely remove the mask to the bottom of the screen with the joystick to end this function.

(Timer)

1) PRESENTER timer

When PRESENTER is selected from the TIMER SET menu, pressing this button displays a timer indication as described on page 20 in Section 4.4, item 1), which disappears after a few seconds.

Press this button to set the timer. A timer value of 45 is displayed, pressing this button again, while this indication is displayed, cycles the timer setting through the following sequence.



Use the +/- buttons while this indication is displayed to change the timer value in increments of 1 minute for times between the factory settings. The maximum setting is 45 minutes.

2) AUDIENCE timer

When AUDIENCE is selected from the TIMER SET menu, pressing this button displays a timer indication as described on page 20, in Section 4.4, item 2).

Press this button to set the timer. A timer value of 45 is displayd, pressing this button again, while this indication is displayed cycles the timer setting through the same sequence as shown in 1) above, while the + and - buttons adjust the timer value in increments of 1 minute.

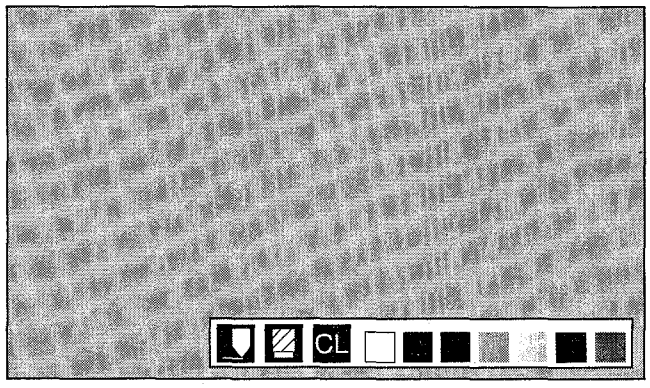
Once the AUDIENCE timer is set, the timer display continues, but when the time is up and the timer value reaches "00", or when at least 5 minutes has elapsed after setting the timer and the Timer button is pressed again, the timer display disappears.

H (HI-BAR)

Pressing this button displays a horizontal bar, which can be moved up and down using the joystick.
To remove the bar display, press the button once again.

(DRAW)

Pressing this button enters the DRAW function, and the display appears as shown in the figure.
Move the joystick while holding down the C(center) mouse button on the remote to draw on the screen.
Press this button once more to exit the DRAW function.Subsequent presses of the DRAW button cycles through the modes as shown in the following figure.



Pen mode:	Use the joystick to move the pointer to the icon, then press the L button to enter pen mode. Hold down the center button and move the joystick to draw the relevant portion of the drawing.
Erase mode:	Use the joystick to move the pointer to the icon, then press the L button to enter erase mode. Hold down the center button and move the joystick to erase on the screen.
Selecting the color	Use the joystick to move the pointer to one of the seven color boxes, then press the L button to select the corresponding color.
Clear function	Move the pointer to the CL icon, and press the L button to clear the whole drawing.

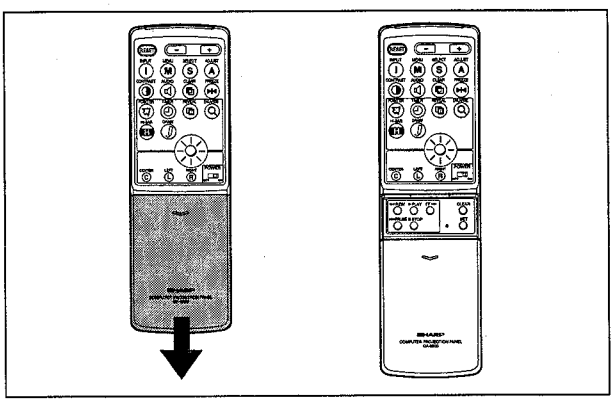
Remote Control Learning Function

The Sharp Remote Control is capable of learning five commands from another infrared remote. This makes it possible to give a video presentation using the Sharp remote to control the video source.

The remote control's five learning buttons (REW, PLAY, FF, PAUSE and STOP) are located inside the battery cover.

The remote is shipped from the factory, with infrared signals for a Sharp video cassette recorder.

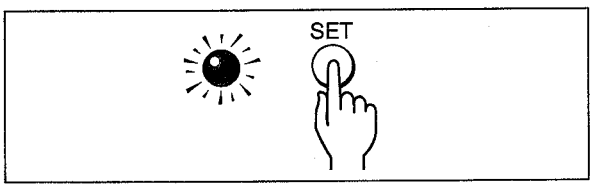
To use the learning function, slide the battery cover of the remote control unit downward, then transfer the signals from the remote control unit for the existing video device to the learning buttons.



Video control code selections made using the learning buttons inside the battery cover are cancelled after about three minutes when the batteries are removed. (The control code selection is restored to Sharp video control code, the factory default.)

Transferring the remote control signals from the video device

1) Press the SET button to light the LED indicator.
   (The unit enters learning mode.)

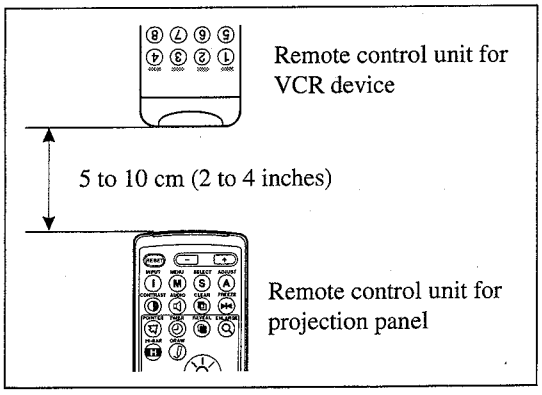


2) Press one of the buttons on the projection panel's remote control unit to set that button's function. The LED will begin to flash at a rate of once per second.

NOTE

If you press two buttons simultaneously, for example, the LED indicator again lights as in 1), and it is necessary to press the button to which the learning is to apply again so that the LED indicator flashes.

3) Set the remote control unit for this unit facing the remote control unit for the video device (the signal emitting position) at a distance of 5 to 10 cm (2 to 4 inches), and press the button on the remote control unit of the video device for the learning operation.
   At this point, when the LED indicator changes from a flashing to constantly lit, the learning operation is complete.



4) To transfer the signals for other operations, repeat steps 2) and 3) as necessary.
5) Press the SET button once again to exit from the learning function.

NOTES

1) Remote control units for some devices may not be compatible and functions will not be memorized.
2) During the learning operation, if you press any unrelated buttons for example, an error indication appears (the LED indicator flashes at a rate of five times a second), and it is necessary to repeat the operation correctly.
3) During the learning operation, all remote control functions are disabled.

To clear a signal setting once transferred, use the following procedure.
(Clearing a setting returns it to the initial setting for a Sharp video cassette recorder.)

- Clearing memory
  1) Press the SET button to enter the learning function.
  2) Press the CLEAR button and the appropriate learning function button simultaneously. This will clear the setting.
  3) Press the SET button once again to exit from the learning function.

Power switch

Since power is drawn from the battery whenever any buttons on the remote control unit are pressed, please set the POWER switch to OFF when the remote control unit is not in use.

6. TROUBLESHOOTING

Before calling for service, please closely review the following troubleshooting information.

Problems:	Possible Solution:
(1) No image appears on the projection panel's display area.	● Make sure that the panel's AC adaptor is properly connected. ● Make sure that the RGB signal cable is properly connected to both the computer and the panel. ● Verify that the panel's power switch is set to the on position. ● Verify that the computer's RGB signal output is compatible with the projection panel's specifications. (See specifications on pages 34-38.) ● Verify that the RGB signal level is appropriate for your software. ● Check that the unit is not in clear mode. ● Check that the computer or video input selection is correct. ● If using a Laptop computer, check the computer's operation manual for external monitor hook up. ● Verify that the video source has power. ● Verify that the video source has tape or disc.
(2) Display is off-centered or flickering, certain images do not appear on the display, or the image appears distorted.	● Verify that the computer's RGB signal output is compatible with the projection panel's specifications. (See Specifications on pages 34-38.) ● Verify that the RGB signal level is suitable to your software. ● Press reset. ● Adjust horizontal and vertical position adjustments to center image. ● Adjust contrast and phase. ● If the projected image flickers, adjust the contrast. ● If vertical bars appear, adjust frequency.
(3) The contrast of the display is not uniform.	● Make sure that the OHP is properly adjusted. ● Make sure that the OHP is a good quality transmissive type, and that the heat from the projector is not causing the temperature of the LCD to reach **45**℃(**113**℉). ● Make sure that the air flow vent is not blocked. ● Make sure the fan is working.
(4) The projected image is difficult to read, out of focus, or reversed.	● Make sure that the OHP is a good quality transmissive type (and not a compact reflective mirror type). ● Make sure that the OHP is properly focused. Note that the correct OHP focus for the projection panel differs slightly from that which is correct for a film-type transparency. ● Verify that the computer's RGB signal output is compatible with the projection panel's specifications. (See specifications on pages 34-38.) ● If the projection panel is being used in a room with very bright lights, image quality may be substantially improved by dimming the lights. ● Check the front- or rear-projection selection.
(5) Image is not centered	● Check to see if you are using 1280×1024 or 1152×870 displays. Use the scroll function to select disired view area. ● Adjust H-POS and V-POS.
(6) The remote control unit does not operate	● Are the batteries in the remote control unit low? ● Check that the batteries in the remote control unit are inserted with the correct polarity. ● Is the remote control unit pointing in the correct direction so that the infrared signal can bounce off the screen and reach the receptor on the projection panel main unit? ● Check that the remote control transmitter is not too far from or too close to the projection panel. ● Is there sunlight or bright illumination such as fluorescent light shining on the infrared receiver on the projection panel main unit? ● Check that no other remote control equipment is being used at the same time. ● Check that the remote control's power switch is ON.

7. MAINTENANCE

The projection panel requires very little maintenance.

NOTE

Check that the power switch is off before performing any maintenance on the panel.

Cleaning the top and bottom glass surfaces

When necessary, clean the glass surfaces of the panel using a soft cloth moistened with any standard glass cleaner.

Cleaning the plastic cabinet

Wipe the cabinet using a soft cloth moistened in a diluted solution of mild detergent.

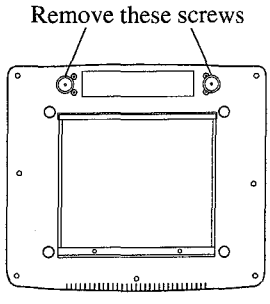
Cleaning the inner surfaces of the glass

Ordinarily, the inner surface of the glass does not require cleaning. However, if dust should appear on the inside of the glass, very carefully remove the glass and wipe off the dust as follows. Procedures are the same for the glass on both sides of the projection panel.

- Cleaning the top glass

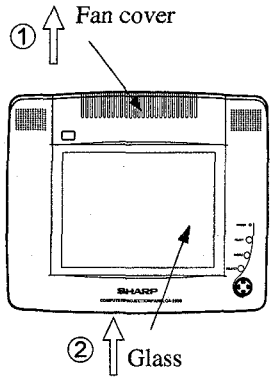
(1) Turn the unit upside down, and remove the two screws indicated in the figure.

Bottom view



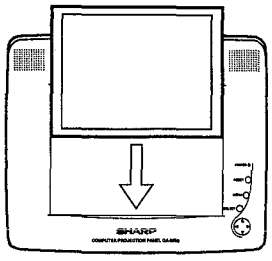
(2) Turn the unit right side up, and remove first the fan cover, then the protective glass.

Top view



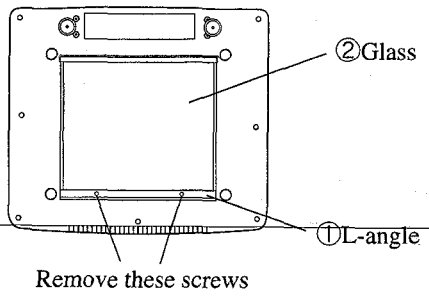
(3) Carefully wipe the underside of the glass. If there is any dust on the surface of the liquid crystal unit, remove it carefully.

(4) Replace the glass and fan cover in their original position, and fasten the two screws.

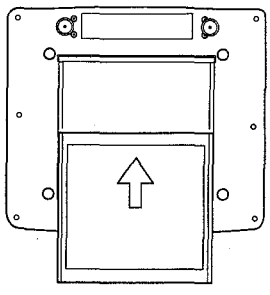


- Cleaning the bottom glass

(1) Turn the unit over and remove the two screws. Then remove the L-angle and take out the glass.



(2) Carefully wipe the inside surface of the glass. If there is any dust on the surface of the liquid crystal unit, remove it carefully.



NOTE

When reinstalling the glass, make sure that it is properly oriented. Fasten the two screws **so that the L-angle keeps the glass securely in place.**

WARNING

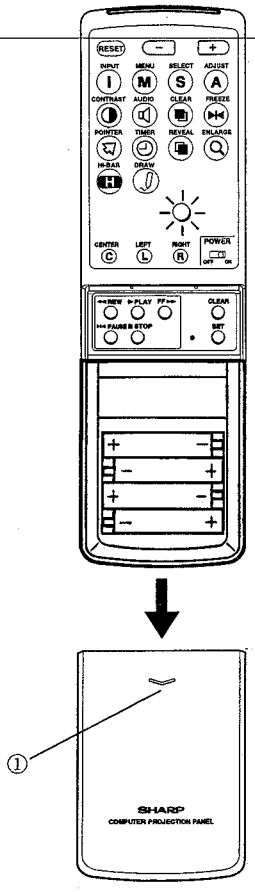
The LCD panel is fragile. Be extremely careful to avoid striking it with sharp objects or pressing on it with excessive force.
Ensure that the glass covers are replaced exactly the same way all around. Otherwise, the printed inscription may obscure the projection area.
Do not remove either cover while the unit is operating.
Do not use thinners or other volatile solvents, or chemically impregnated cleaning solvents on the unit. The plastic components may be discolored or mechanical damage, and may result in failure of the unit.
The glass covers are fragile. Handle them carefully after removing them from the unit.

NOTES

1) Do not clean with chemically-treated cloths, benzine, or paint thinner. These kinds of cleaning materials will chemically alter the cabinet material, resulting in cracking, peeling, and damage to the finish.
2) Do not spill any liquid into the unit. Liquid spills can cause irreparable damage.

Installing the Remote control unit betteries

1) Press in at ① and slide the battery compartment cover to remove it.
2) Insert the four supplied AA/LR6 alkaline batteries into the battery compartment, being careful to match the polarity with the + and - indications.
3) Replace the battery compartment cover.
4) Replace the batteries when the maximum operating range of the remote control unit begins to decrease.



Notes on batteries

- Do not mix old and new batteries.
- If not using the remote control unit for a long time, remove the batteries.
- Do not short-circuit the batteries, or attempt to recharge them.

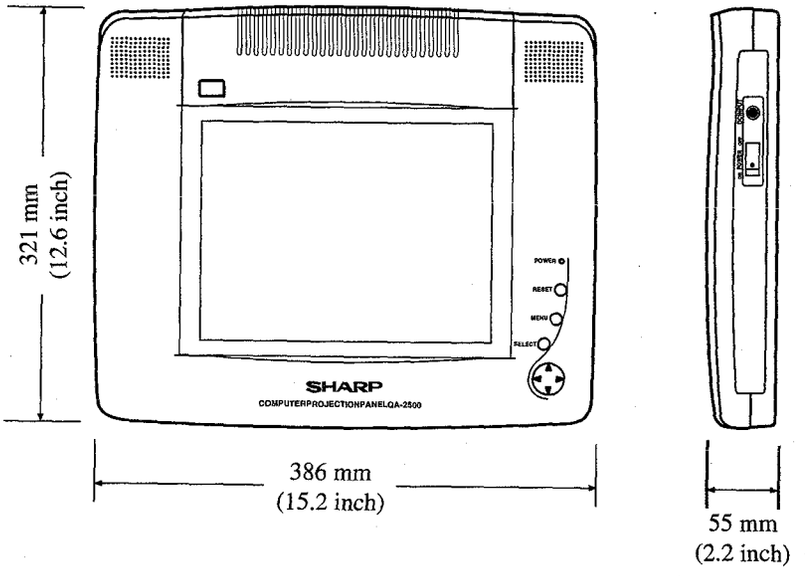
Transporting the unit

When transporting the projection panel over a long distance, use a carrying case* to prevent excessive jarring or strong vibration.

*Optional Sharp soft and hard carrying cases are available. See your local dealer.

8. SPECIFICATIONS

(a) EXTERNAL DIMENSIONS



(b) MECHANICAL SPECIFICATIONS

1. Panel	Dimensions:	386(W)×321 (D)×55(H) mm (15.2×12.6×2.2 inches)
	Net weight:	Approx. 3.2 kg/7.15 lbs (panel only)
2. LCD	LCD type:	10.4" (diagonal) Color TFT (Thin Film Transistor) LCD
	Display area:	212(H)×159(V) mm (8.4×6.3 inches)
	Number of dots (pixels):	(1024×3) (W)×768 (H)
	Pixel pitch:	0.207(H)×0.207(V) mm
	Contrast Ratio:	60:1 (typical)

(c) ENVIRONMENTAL CONDITIONS

Operating temperature:	0℃ ~ +30℃ (+32℉~ +86℉)
Storage temperature:-	-20℃~ +60× (-4℉ ~ +140℉)
Humidity:	Ta ≤ 40℃: 90% RH
	Ta > 40℃: Absolute humidity shall be less than Ta=40℃/90% RH (Ta: Temperature of the LCD)

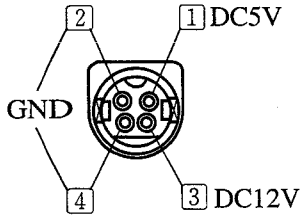
WARNING

Do not use the projection panel with any overhead projector that can raise the temperature of the LCD to 45℃ (113℉) under normal conditions.
Do not expose or store the projection panel in an area where there is direct sunlight on the panel for any period of time.

(d) ELECTRICAL SPECIFICATIONS

Power supply: AC 110V - 240V at 50/60 Hz (only AC adaptor)

1	DC 5V
2	GND
3	DC 12V
4	GND

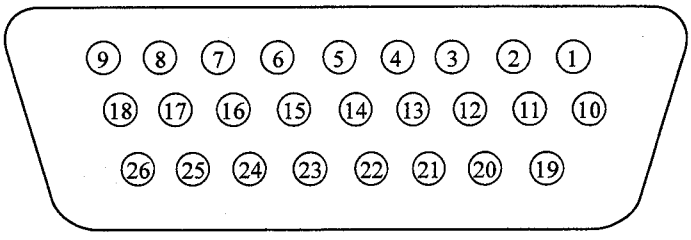


Power consumption: Approx. 45W AC adaptor input
Approx. DC12V, 1.8A, DC5V, 2.5A panel only

(e) INPUT TERMINALS

1) Computer video input connector
Pin assignments

1	N. C.	14	Analog Green Return
2	N. C.	15	Analog Red Return
3	N. C.	16	Digital GND
4	Analog Blue	17	ID1
5	Analog Green	18	ID0
6	Analog Red	19	Vsync (Digital)
7	Digital GND	20	Hsync/Csync(Digital)
8	Test 1 (CSYID0)	21	ID3
9	Test 2 (D/A)	22	ID2
10	N. C.	23	Digital GND
11	N. C.	24	Digital GND
12	N. C.	25	Digital GND
13	Analog Blue Return	26	Test 3 (CSYID1)

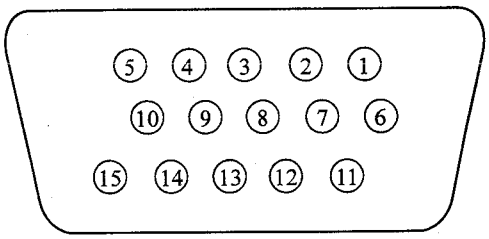


	Apple® computer	monitor output BNC typeWorkstation	IBM® VGA XGA	monitor output 13W3 typeWorkstation
Test 1	LOW (GND)	OPEN (N.C.)	OPEN (N.C.)	LOW (GND)
Test 3	OPEN (N.C.)	LOW (GND)	OPEN (N.C.)	LOW (GND)

	Anlog RGB input	Digital RGB input
Test 2	LOW (GND)	OPEN (N.C.)

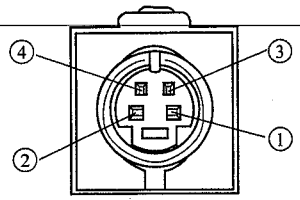
2) External monitor output connector
Pin assignments

1	Analog R (75Ω load)
2	Analog G (75Ω load)
3	Analog B (75Ω load)
4	ID2
5	Digital GND
6	Analog R Return
7	Analog G Return
8	Analog B Return
9	GND
10	Digital GND
	Shield
11	ID0
12	ID1
13	Hsync (Digital)
14	Vsync (Digital)
15	ID3

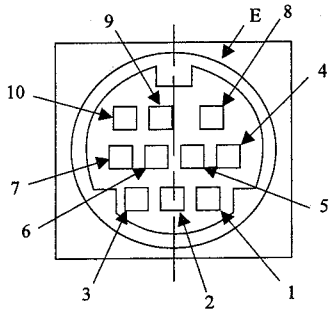


3) S video port
Connector:TCS7931-14-401
Pin Assignment

1	GND
2	GND
3	Y
4	C



4) Mouse control port



No.	Signal name	Status	Signal level
1	Transmit Data	O	RS-232C
2	Data Set Ready	I	RS-232C
3	Selector 2	I	GND or N.C.
4	GND	—	—
5	Vcc (5V)	—	—
6	DATA1	I/O	INPUT : TTL OUTPUT : V_{OH} = VCC V_{OL} = GND
7	Selector 1	I	GND or N.C.
8	DATA2	I/O	INPUT : TTL OUTPUT : V_{OH} = VCC V_{OL} = GND
9	Selector 3	I	GND or N.C.
10	N.C.	—	

f) SIGNAL CABLES

1) VGA/MCGA signal cable

Connect to IBM® PS/2 VGA or XGA output port.

Pin assignments

Computer Pin No.	Connection	Projection panel Pin No.	Signal
1	←→	6	Analog R (75Ω load)
2	←→	5	Analog G (75Ω load)
3	←→	4	Analog B (75Ω load)
4	←→	22	ID2
6	←→	15	Analog R Return
7	←→	14	Analog G Return
8	←→	13	Analog B Return
10	←→	24	Digital GND
	↳	23	Shield
11	←→	18	ID0
12	←→	17	ID1
13	←→	20	Hsync (Digital)
14	←→	19	Vsync (Digital)
—	↳	9	(Connected to pin 16 on panel)
	↳	16	GND (Connected to pin 9 on panel)
5.9		1-3, 7, 8, 10-12 25, 26	Not connected
15	←→	21	ID3

2) 13W3 Signal cable

Connect to the Workstation provided with the 13W3 monitor output.

Pin Arrangement

Computer Pin No.	Connection	Projection panel Pin No.	Signal
A1 inside	←→	6	Analog R
A1 outside	←→	15	Analog R return
A2 inside	←→	5	Analog G
A2 outside	←→	14	Analog G return
A3 inside	←→	4	Analog B
A3 outside	←→	13	Analog B return
5	←→	20	Sync (Digital)
3	←→	18	ID0
8	←→	17	ID1
9	←→	22	ID2
4	←→	7	Shield
10	←→	23	GND
	↳	26	
	↳	9	GND
	↳	16	
	↳	8	
	↳	25	
		1~3, 10~12 19, 21, 24	Not connected

g) Compatible Video Parameters

Input signal	Display size		Frequency		Notes
	Horizontal (dot)	Vertical (line)	Horizontal (KHz)	Vertical (Hz)	
IBM VGA	720	400	31.469	70.00	
	640	480	31.469	59.94	
IBM VGA/MCGA	640	400	31.469	70.00	
	640	350	31.469	70.00	
Apple Macintosh II Video card	640	480	35.000	66.68	
Apple Macintosh LC	640	480	34.971	66.67	
Radius Precision Color PRO 24x	1152	870	68.68	75	*1
	1024	768	60.24	75	
	832	624	49.73	75	
VESA 800×600	800	600	35.156	56.25	
	800	600	37.879	60.32	
	800	600	48.077	72.19	
VESA 1024×768	1024	768	48.363	60	*1
	1024	768	56.478	70	
	1024	768	58	72	
	1024	768	60.023	75	
IBM XGA	1024	768	35.381	86.6	*1
SUN SPARK Station	1024	768	53.660	70	*1 with graphic board "Turbo GX"
SGI Workstation INDY	1024	768	56.476	70	*1
DEC station MODEL 5000	1024	864	54.054	60	*1 VR262/297/299 (monitor mode)
	1280	1024	70.662	66.47	*1 VR319 (monitor mode)
HP Workstation 9000	1280	1024	78.125	72	*1
IBM RS6000	1280	1024	63.360	60	*1 with graphic board Gt1, mode 6091-23 color

*1: For high resolution signals of 1024×768 pixels or more, in some cases the display may not be correct.

- Specifications are subject to change without notice.
- IBM® PS/1, PS/2, PS/55 and IBM® PC XT/AT are trademarks of International Business Machines Corporation.
- Apple® Macintosh LC, Apple® Macintosh II, Macintosh +/SE, Apple® II/II+/IIc/IIe/IIgs are trademarks of Apple Computer, Inc.
- AT&T® PC6300WGS, PC6386WGS, PC6312WGS, PC6286WGS are trademarks of AT&T Co.
- Hercules® /Plus/In-Color are trademarks of Hercules Computer Technology, Inc.

- Les caractéristiques sont sujettes à modification sans préavis.
- IBM® PS/1, PS/2, PS/55 et IBM® PC XT/AT sont des marques de fabrique de International Business Machines Corporation.
- Apple® Macintosh LC, Apple® Macintosh II, Macintosh+/SE, Apple® II/II+/IIc/IIe/IIgs sont des marques de fabrique de Apple Computer, Inc.
- AT&T® PC6300WGS, PC6386WGS, PC6312WGS, PC6286WGS sont des marques de fabrique de AT&T Co.
- Hercules® /Plus/In-Color sont des marques de fabrique de Hercules Computer Technology, Inc.

- Änderungen der technischen Daten ohne Vorankündigung vorbehalten.
- IBM® PS/1, PS/2, PS/55 und IBM® XT/AT sind Warenzeichen der International Business Machines Corporation.
- Apple® Macintosh LC, Apple® Macintosh II, Macintosh +/SE, Apple® II/II+/IIc/IIe/IIgs sind Warenzeichen der Apple Computer, Inc.
- AT&T® PC6300WGS, PC6386WGS, PC6312WGS, PC6286WGS sind Warenzeichen von AT&T Co.
- Hercules® /Plus/In-Color sind Warenzeichen der Hercules Computer Technology, Inc.

- I dati tecnici sono soggetti a cambiamenti senza preavviso.
- IBM® PS/1, PS/2, PS/55 e IBM® PC XT/AT sono marchi registrati della International Business Machines Corporation.
- Apple® Macintosh LC, Apple ® Macintosh II, Macintosh +/SE, Apple® II/II+/IIc/IIe/IIgs sono marchi registrati della Apple Computer Inc.
- AT&T PC6300WGS, PC6386WGS, PC6312WGS, PC6286WGS sono marchi registrati della AT&T Co.
- Hercules® /Plus/In-Color sono marchi registrati della Hercules Computer Technology, Inc.

- Las especificaciones están sujetas a cambio sin previo aviso.
- IBM® PS/1, PS/2, PS/55 e IBM® PC XT/AT son marcas registradas de International Business Machines Corporation.
- Apple® Macintosh LC, Apple® Macintosh II, Macintosh +/SE, Apple® II/II+/IIc/IIe/IIgs son marcas registradas de Apple Computer, Inc.
- AT&T® PC6300WGS, PC6386WGS, PC6312WGS, PC6286WGS son marcas registradas de AT&T Co.
- Hercules® /Plus/In-Color son marcas registradas de Hercules Computer Technology, Inc.

- Specifikaties wijzigbaar zonder voorafgaande kennisgeving.
- IBM® PS/1, PS/2, PS/55 en IBM® zijn handelsmerken van International Business Machines Corporation.
- Apple® Macintosh LC, Apple® Macintosh II, Macintosh +/SE, Apple® II/II+/IIc/IIe/IIgs zijn handelsmerken van Apple Computer, Inc.
- AT&T® PC6300WGS, PC6386WGS, PC6312WGS, PC6286WGS zijn handelsmerken van AT&T Co.
- Herculus® /Plus/In-color zijn handelsmerken van Herculus Computer Technology, Inc.